Dataset Summary

August 3, 2018

Col.	Col. Name	Format	Units	Range	Description
1	NODE_ID	str	-	$1 - 960$	Node ID
2	STATE_NAME	str	-	-	State in which node is located
3	NEM_REGION	str	-	-	NEM region in which node is located
4	NEM_ZONE	str	-	-	NEM zone in which node is located
5	VOLTAGE_KV	int	kV	$110 - 500$	Node voltage
6	RRN	int	-	$0 - 1$	If 1 node is a RRN, if 0 node is not a RNN
7	PROP_REG_D	float	-	$0.0 - 0.123$	Proportion of NEM regional demand consumed at node
8	LATITUDE	float	N°	$-43.2 - -15.9$	Latitude (GDA94)
9	LONGITUDE	float	E°	$135.5 - 153.5$	Longitude (GDA94)

Table 1: Network nodes dataset summary

Col.	Col. Name	Format	Units	Range	Description
1	LINE_ID	str	-	-	Network edge ID
2	NAME	str	-	-	Name of network edge
3	FROM_NODE	int	-	$1 - 960$	Node ID for origin node
4	TO_NODE	int	-	$1 - 960$	Node ID for destination node
5	R_PU	float	p.u.	$6.09 \times 10^{-6} - 0.407$	Per-unit resistance
6	X_PU	float	p.u.	$1.52 \times 10^{-5} - 0.829$	Per-unit reactance
7	B_PU	float	p.u.	$1.07 \times 10^{-5} - 1.249$	Per-unit susceptance
8	NUM_LINES	int	-	$1 - 4$	Number of parallel lines
9	LENGTH_KM	float	km	$0.03 - 315.7$	Line length
10	VOLTAGE_KV	float	kV	$110 - 500$	Line voltage

Table 2: Network edges dataset summary

Col.	Col. Name	Format	Units	Range	Description
1	HVDC_LINK_ID	str	-	-	HVDC link ID
2	FROM_NODE	int	-	605 – 806	Node ID of origin node
3	TO_NODE	int	-	88 – 298	Node ID of destination node
4	FORWARD_LIMIT_MW	float	MW	180 – 594	'From' node to 'To' node power-flow limit
5	REVERSE_LIMIT_MW	float	MW	180 – 478	'To' node to 'From' node power-flow limit
6	VOLTAGE_KV	float	kV	132 – 400	HVDC link voltage

Table 3: Network HVDC links dataset summary

Col.	Col. Name	Format	Units	Range	Description
1	INTERCONNECTOR_ID	str	-	-	AC interconnector ID
2	FROM_NODE	int	-	40 – 806	Node ID of origin node
3	FROM_REGION	str	-	-	Region in which 'From' node is located
4	TO_NODE	int	-	5 – 807	Node ID for destination node
5	TO_REGION	str	-	-	Region in which 'To' node is located
6	VOLTAGE_KV	float	kV	110 – 330	Line voltage

Table 4: AC interconnector locations dataset summary

Col.	Col. Name	Format	Units	Range	Description
1	INTERCONNECTOR_ID	str	-	-	AC interconnector ID
2	FROM_REGION	str	-	-	Region in which 'From' node is located
3	TO_REGION	str	-	-	Region in which 'To' node is located
4	FORWARD_LIMIT_MW	float	MW	107 – 1600	'From' node to 'To' node power-flow limit
5	REVERSE_LIMIT_MW	float	MW	210 – 1350	'To' node to 'From' node power-flow limit

Table 5: AC interconnector flow limits summary

Col.	Col. Name	Format	Units	Range	Description	Source[†]
1	DUID	str	-	-	Unique ID for each unit	[1]
2	STATIONID	str	-	-	ID of station to which DUID belongs	[1]
3	STATIONNAME	str	-	-	Name of station to which DUID belongs	[1]
4	NEM_REGION	str	-	-	Region in which DUID is located	
5	NEM_ZONE	str	-	-	Zone in which DUID is located	
6	NODE	int	-	$9 - 940$	Node to which DUID is assigned	
7	FUEL_TYPE	str	-	-	Primary fuel type	[1]
8	FUEL_CAT	str	-	-	Primary fuel category	
9	EMISSIONS	float	tCO_2/MWh	$0.0 - 1.56$	Equivalent CO_2 emissions intensity	[3]
10	SCHEDULE_TYPE	str	-	-	Schedule type for unit	[1]
11	REG_CAP	float	MW	$21 - 1500$	Registered capacity	[1]
12	MIN_GEN	float	MW	$0.0 - 347.2$	Minimum dispatchable output	[1, 2]
13	RR_STARTUP	float	MW/h	$60 - 12000$	Ramp-rate for start-up	[2]
14	RR_SHUTDOWN	float	MW/h	$40 - 9740$	Ramp-rate for shut-down	[2]
15	RR_UP	float	MW/h	$60 - 12000$	Ramp-rate up when running	[2]
16	RR_DOWN	float	MW/h	$60 - 10080$	Ramp-rate down when running	[2]
17	MIN_ON_TIME	int	h	$0 - 16$	Minimum on time	[2]
18	MIN_OFF_TIME	int	h	$0 - 16$	Minimum off time	[2]
19	SU_COST_COLD	int	$	$0 - 260400$	Cold start start-up cost	[2]
20	SU_COST_WARM	int	$	$0 - 89280$	Warm start start-up cost	[2]
21	SU_COST_HOT	int	$	$0 - 29760$	Hot start start-up cost	[2]
22	VOM	float	$/MWh	$0.0 - 12.5$	Variable operations and maintenance costs	[2]
23	HEAT_RATE[‡]	float	GJ/MWh	$0.0 - 15.7$	Heat rate	[2]
24	NL_FUEL_CONS	float	-	$0.0 - 0.3$	No-load fuel consumption as a proportion of full load consumption	[2]
25	FC_2016-17	float	$/GJ	$0.0 - 8.6$	Fuel cost for the year 2016-17	[2]
26	SRMC_2016-17	float	$/MWh	$0.0 - 129.7$	Short-run marginal cost for the year 2016-17	

[†] Where no source is given, the value has been derived as part of the dataset construction procedure. NEM_REGION and NEM_ZONE were found by determining the region and zone of each generator's assigned node. FUEL_CAT assigns a generic category to FUEL_TYPE. MIN_GEN was computed by combining minimum output as a proportion of nameplate capacity from [2] with registered capacities from [1]. SRMC_2016-17 is calculated from VOM, HEAT_RATE, and FC_2016-17 fields, using equation (1).

[‡] While not explicitly stated, it is assumed that a lower heating value is referred to. This is consistent with another field in [2] that gives DUID thermal efficiency in terms of lower heating values.

Table 6: Generator dataset summary

Col.	Col. Name	Format	Units	Range	Description
1	SETTLEMENTDATE	timestamp	-	1/6/2017 12:30:00 AM - 1/7/2017 12:00:00 AM	Trading interval
2	NSW1	float	MW	6298.7 – 11652.8	New South Wales demand signal
3	QLD1	float	MW	4864.0 – 7728.7	Queensland demand signal
4	SA1	float	MW	1002.9 – 2287.1	South Australia demand signal
5	TAS1	float	MW	921.0 – 1708.6	Tasmania demand signal
6	VIC1	float	MW	3795.8 – 7357.3	Victoria demand signal

Table 7: Regional demand signals dataset summary

Col.	Col. Name	Format	Units	Range	Description
1	SETTLEMENTDATE	timestamp	-	1/6/2017 12:30:00 AM - 1/7/2017 12:00:00 AM	Trading interval
2-265	(DUID)	float	MW	-	DUID dispatch profile

Table 8: DUID dispatch profiles. Columns correspond to DUIDs.

References

[1] Australian Energy Market Operator. Data Archive. *NEMWEB Market Data* http://www.nemweb.com.au/#mms-data-model (2018).

[2] Australian Energy Market Operator. 2016 NTNDP Database. *AEMO NTNDP Database* https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/National-Transmission-Network-Development-Plan/NTNDP-database (2018).

[3] Australian Energy Market Operator. Current Reports. *NEMWEB Market Data* http://www.nemweb.com.au/Reports/Current/ (2018).

1 Appendix

SRMC calculation:

$$\text{SRMC [\$/MWh]} = \text{Heat Rate [GJ/MWh]} \times \text{Fuel Cost [\$/GJ]} + \text{VOM Cost [\$/MWh]} \quad (1)$$